

## Séminaire

**Mardi 18 février 2025 à 10h30**  
**Amphithéâtre Henri Benoît**

**Patrick JUDEINSTEIN**

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# Transport in Liquid Electrolytes: Structure also Matters!

Electrolytes are of pivotal importance in the field of electrochemical devices (batteries, fuel cells, etc.) and should ideally combine efficient selective transport properties with high stability, non-toxicity, sustainability and recyclability. These properties are evidently related to their composition and the intimate interactions between solvent molecules, cations and anions.

In this respect, our approach is to combine complementary experimental (self-diffusion coefficients [PFG-NMR], short-range organisation [WAXS], ionic conductivity, viscosity ...) and molecular dynamic methodologies.

In this talk, we will screen different electrolyte systems based on ionic liquid, molecular and polymer solvents and aqueous electrolytes, and we will present properties of these systems and highlight the molecular characterization of mobile ionic species: ion pairing, solvation shells, ionic clusters...

"Comment se déplacent les ions dans un électrolyte ? La RMN au secours des batteries au lithium, P. Judeinstein, F. Alloin, *Spectra Analysis*, **300**, (2014), 46-56.

"Structure/Dynamics Interplay in Ionic Liquid based Electrolytes: Experiment and Molecular Simulation", P. Judeinstein, M. Zeghal, D. Constantin, C. Iojoiu, B. Coasne, *J. Phys. Chem. B*, **125**, (2021), 1618-1631.

"Transport properties of alkali/alkaline earth cations in ionic-liquid based electrolytes", H. P. Khanh Ngo, E. Planes, C. Iojoiu, P. Soudant, A.-L. Rollet, P. Judeinstein, *J. Ionic Liq.*, **2**, (2022), 100044.

"Coefficients de diffusion RMN pour décrire les matériaux complexes", P. Judeinstein, F. Ribot, M. Zeghal, P. Wzietek, *Techniques de l'Ingénieur*, **2024**, R 1 307, 1-32.

Les personnes souhaitant rencontrer P. Judeinstein sont priées de prendre contact avec Ph. Méziini.